CLAIMS

1. Method of electromagnetic stirring in the secondary cooling zone of a plant for the continuous casting of metal products of elongate cross section, the mould of which is provided with a submerged casting nozzle having lateral discharge outlets directed towards the narrow faces of the mould, which stirring method is implemented by means of travelling magnetic fields generated by multiphase inductors placed near the cast metal, characterized in that, for the purpose of promoting liquid metal exchange within the liquid pool (6) between the secondary cooling zone (2) and the mould (1), a longitudinal metal flow is forcibly established in the said secondary cooling zone, said flow being localized in the middle region of the cast product as two opposing collinear streams (10a, 10b, or 20a, 20b) and providing circulation of the liquid metal as a "four-leaf clover" configuration design having two upper lobes and two lower lobes, said upper lobes (L1, L4) extending into the mould right up to the level of the jets (7, 7') coming out from the discharge outlets (5, 5') of the submerged casting nozzle (4).

2. Stirring method according to claim 1, characterized in that the said longitudinal opposing collinear streams (10a, 10b) in the middle region of the cast product, which move away from each other, are created in such a way that the said two upper lobes (L1, L4) which extend into the mould right up to the level of the jets (7, 7') coming out from the discharge outlets (5, 5') of the casting nozzle (4) merge concurrently with the said jets in order to reinforce them.

3. Stirring method according to claim 1, characterized in that the said longitudinal opposing collinear streams (20a, 20b) in the middle region of the cast product, which converge on each other, are created in such a way that the two upper lobes (L1, L4) that extend into the mould up to the level of the jets (7, 7') emanating from the discharge outlets (5, 5') of the casting nozzle (4) are superposed counter-currently on the said jets in order to slow them down.

4. Stirring method according to claim 1, characterized in that the location of said longitudinal flow in the secondary is shifted laterally towards one or other of the small sides of the cast product.

5. Stirring method according to claims 2 and 3, characterized in that said longitudinal metal flow is created as two opposing collinear streams by means of collinear moving magnetic fields that travel longitudinally in the said central region, either coming closer together, or further apart.

6. Stirring method according to claims 2 and 3, characterized in that said longitudinal metal flow is created as two opposing collinear streams by means of collinear moving magnetic fields that travel transversely over the width of the cast product, either coming closer together from the edge towards the centre of the cast product, or moving further apart from the centre towards the edge of the cast product.

7. Stirring method according to claim 1, characterized in that said travelling magnetic fields are generated by means of multiphase linear inductors that are placed facing the large faces of the cast product.

8. Method according to claim 7, characterized in that said inductors are supplied with electric currents of different intensities.

9. Method according to one of the preceding claims, characterized in that other travelling magnetic fields are also used that act directly in the mould (1) on the jets (7, 7') of metal discharging from the outlets (5, 5') of the nozzle (4).

10. Flat metal product obtained from a continuous casting plant, the secondary cooling zone of which being the location of an electromagnetic stirring operation according to that defined in claim 1.